



FLS FLOWX3 F9.00 Flow Monitors & Transmitters are designed to convert the signal from all FLOWX3 flow sensors into a display indication and a 4-20 mA signal for long distance transmission. A very simple and complete choice of options are granted by single or dual input/output, two solid state relays output and one relay output.

The high flexibility is also maximized with only one packaging for compact pipe mount, panel or wall installation.

Self explaining calibration menus allow a customized setup of all measuring parameters and the state of the art electronic design ensures long-term reliable and stable signals.

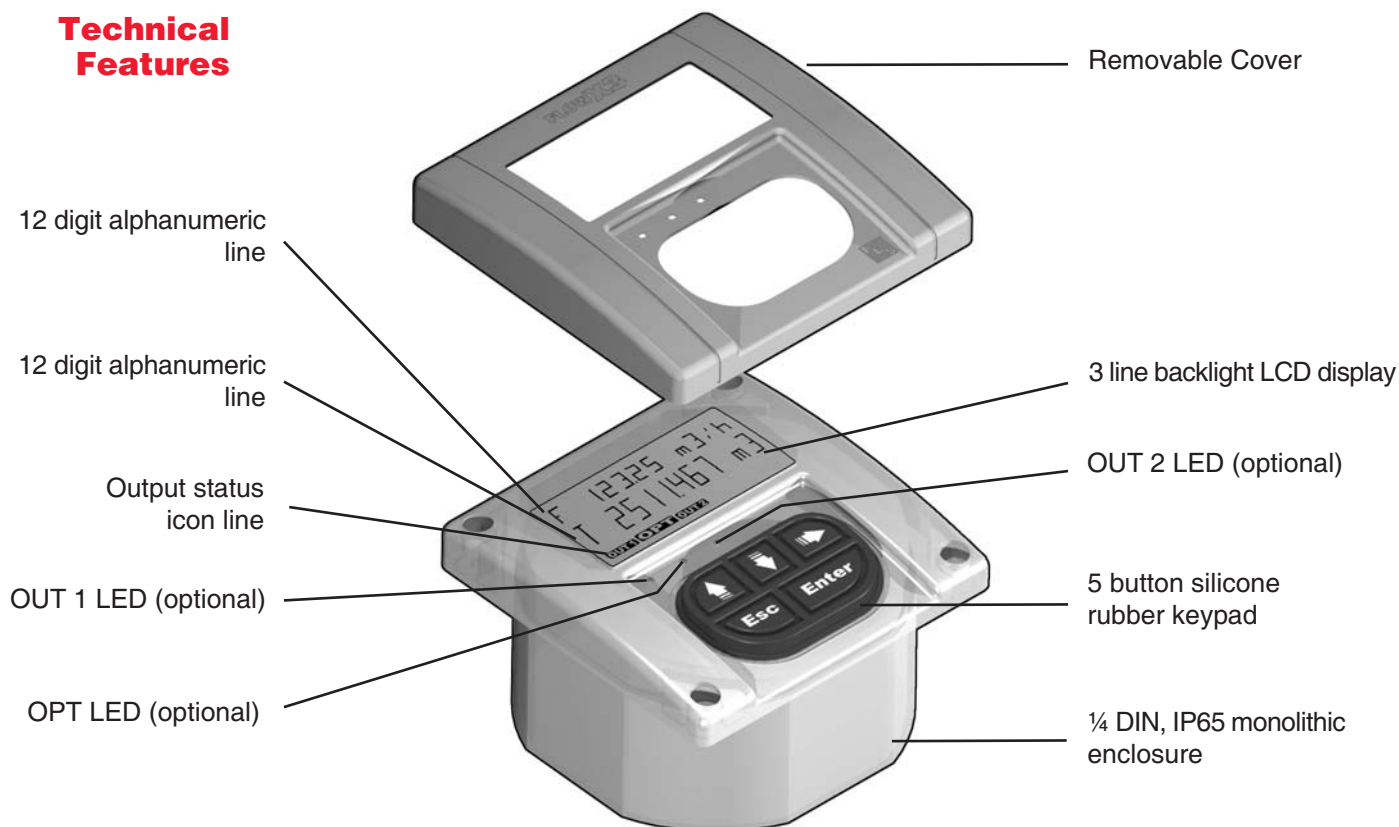
Main Features

- Permanent and resettable totalizer.
- Adjustable outputs.
- Relay, Open Collector and Solid State Relay options.
- Installation flexibility.
- 3 line alphanumeric backlight LCD (except F9.03).
- IP65 monolithic packaging.
- 5 button keypad.
- Output simulation for system testing.
- One packaging for compact/pipe, panel or wall installation.
- Self explaining calibration menus.
- Auto-calibration.


Applications

- Flow control and measuring.
- Water treatment and regeneration.
- Industrial wastewater treatment and recovery.
- Water distribution.
- Leak detection.
- Processing and manufacturing industry.
- Textile finishing.
- Filtration systems.
- Chemical Industry.
- Liquid delivery systems.
- Auxiliary plants.
- Swimming pools & Spas.

Technical Features



Technical Features

Flow Monitor	Part No.	Wire Power Tech.	Associated Sensor	Sensor Input	4-20 mA Output	Digital Output	Relay Output
	F9.00.L	2 wire	Hall Effect	1	1	1 S.S.R.- MIN, MAX, Pulse, Window, Freq., Off	----
	F9.02.L	3/4 wire	Hall Effect	1	1	2 S.S.R.- MIN, MAX, Pulse, Window, Freq., Off	1 - MIN, MAX, Pulse, Window, Off
	F9.03	3/4 wire	Hall Effect	2	2	1 O.C.- MIN, MAX, Pulse, Freq., Off	2 - MIN MAX, Pulse, Off

O.C.= Open Collector - S.S.R. = Solid State Relay.

Engineering Data

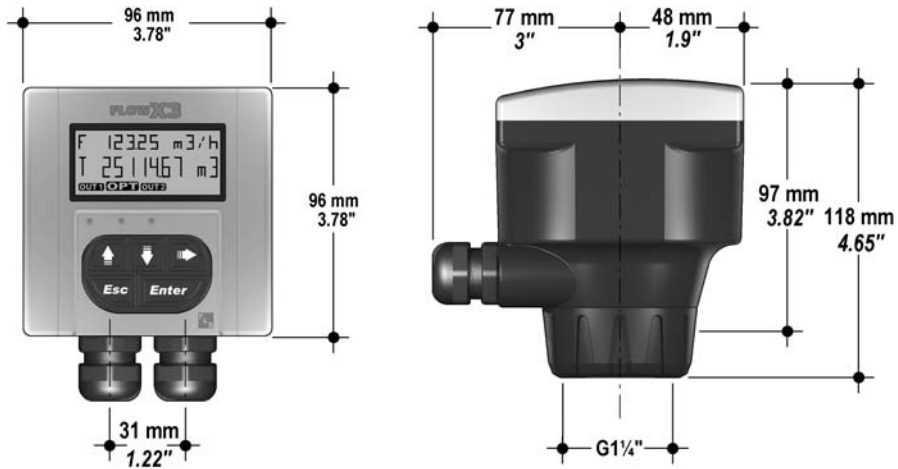
- The flow transmitter is designed with only one packaging for compact/pipe, panel or wall installation.
- The flow transmitter has ¼ DIN panel mount standard dimensions: 96 x 96 mm (3.8 x 3.8 inch).
- The instrument meets IP65 standards.
- The instrument provides flow rate indication and dual totalization with fully scaleable engineering units.
- The flow transmitter is equipped with a 3 line LCD: 2 x 12 alphanumeric lines and 1 icon line
- Backlight LCD Display (except for F9.03)
- The flow transmitter is equipped with a silicone rubber 5 button keypad.
- The flow transmitter is compatible with all FLS FLOWX3 Hall Effect Flow Sensor.
- The instrument provides auto-calibration and simulation options.

Connections to FLOWX3 Sensors

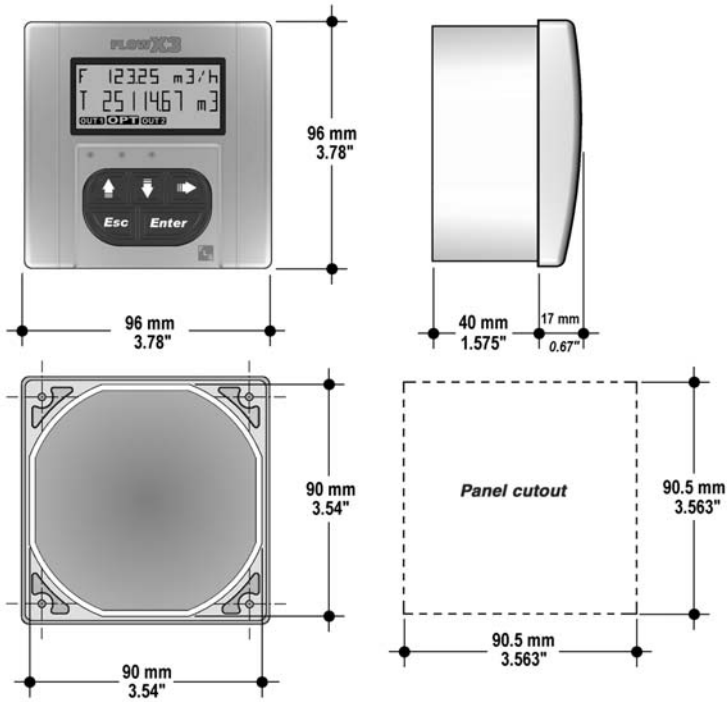
FLOWX3 Monitors	FLOWX3 Sensors														
	F3.00.H	F3.00.C	F3.01.H	F3.01.C	F3.10.H	F3.15.H*	F3.30.H*	ULF.H	ULF.R	ULF3.15*	ULF3.30*	F3.80	F111.H	F111.C	F3.60M F3.63M
F9.00.L	■		■		■				■				■		
F9.02.L	■		■		■	■		■		■		■	■		■
F9.03	■		■		■	■		■		■		■	■		■

* with Output Kit mounted.

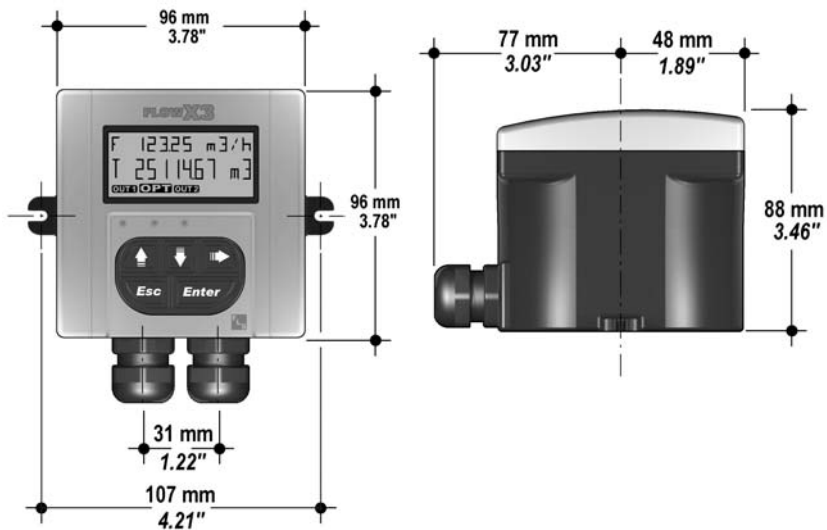
Dimensions Compact Mount



Panel Mount



Wall Mount

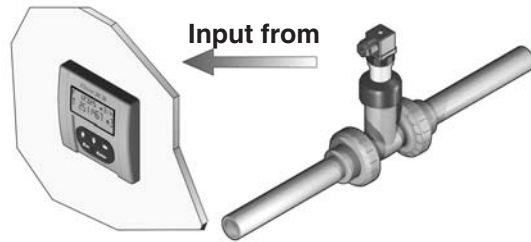


Installation

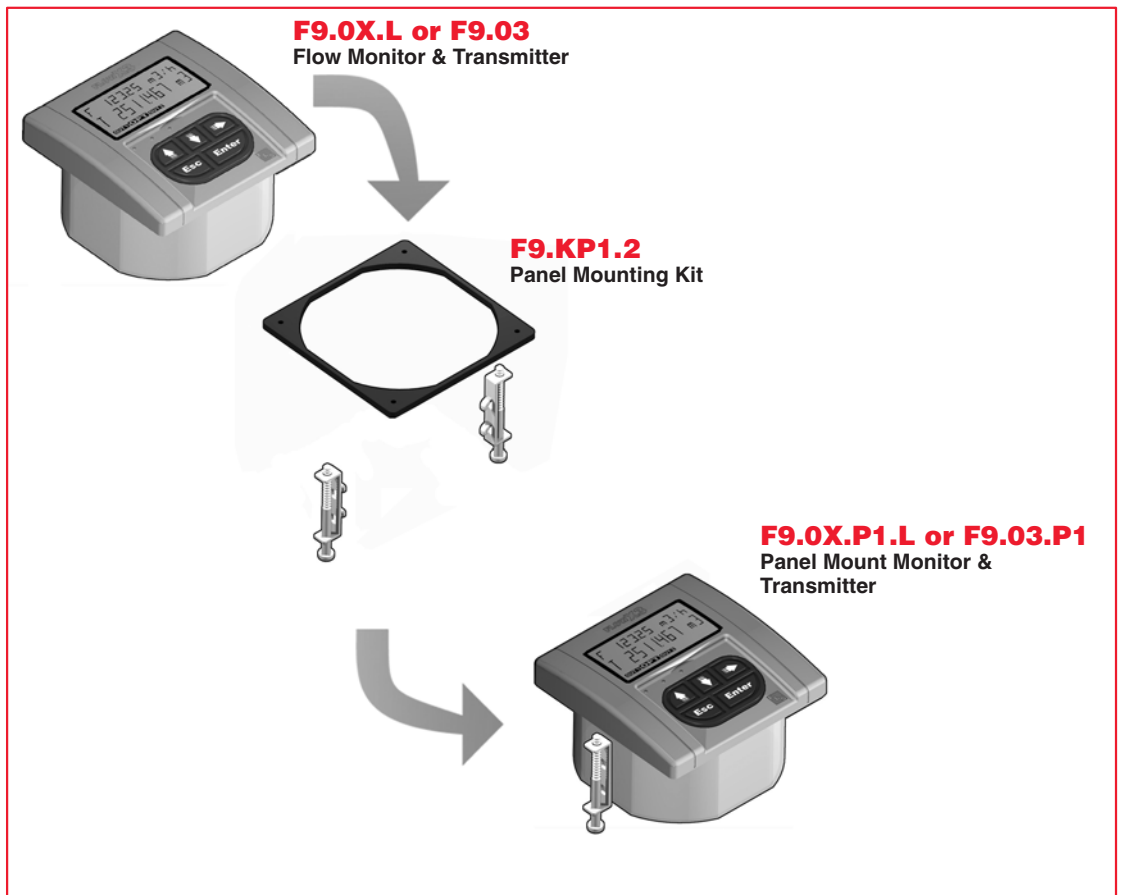
The flow monitor & transmitter is available just in one packaging for compact field version, panel or wall installation. The compact field version is mounted on top of the sensor using the compact mounting kit (F9.KC1), the panel version is installed using the panel mounting kit (F9.KP1.2), while the wall mounting version is fixed to the wall by the mounting kit (F9.KWX).

The mounting kits can be ordered directly connected to the monitor or separately and then simply installed on it. Please refer to Ordering Data section for a complete listing of part numbers.

Panel Mount



The panel mounting version consists of the monitor and the mounting bracket kit F9.KP1.2 with gasket for IP65 watertight panel installation. The monitor perfectly fits into a standard ¼ DIN panel cutout. The instrument and the kit can be ordered separately (code F9.0X.L or F9.03) or together using the code F9.0X.P1.L or F9.0X.P1.



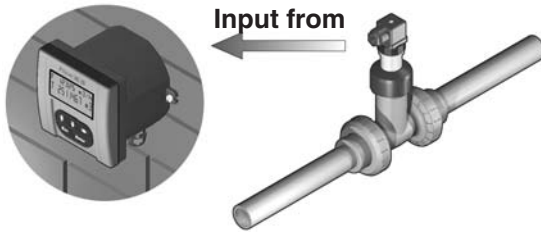
Input from



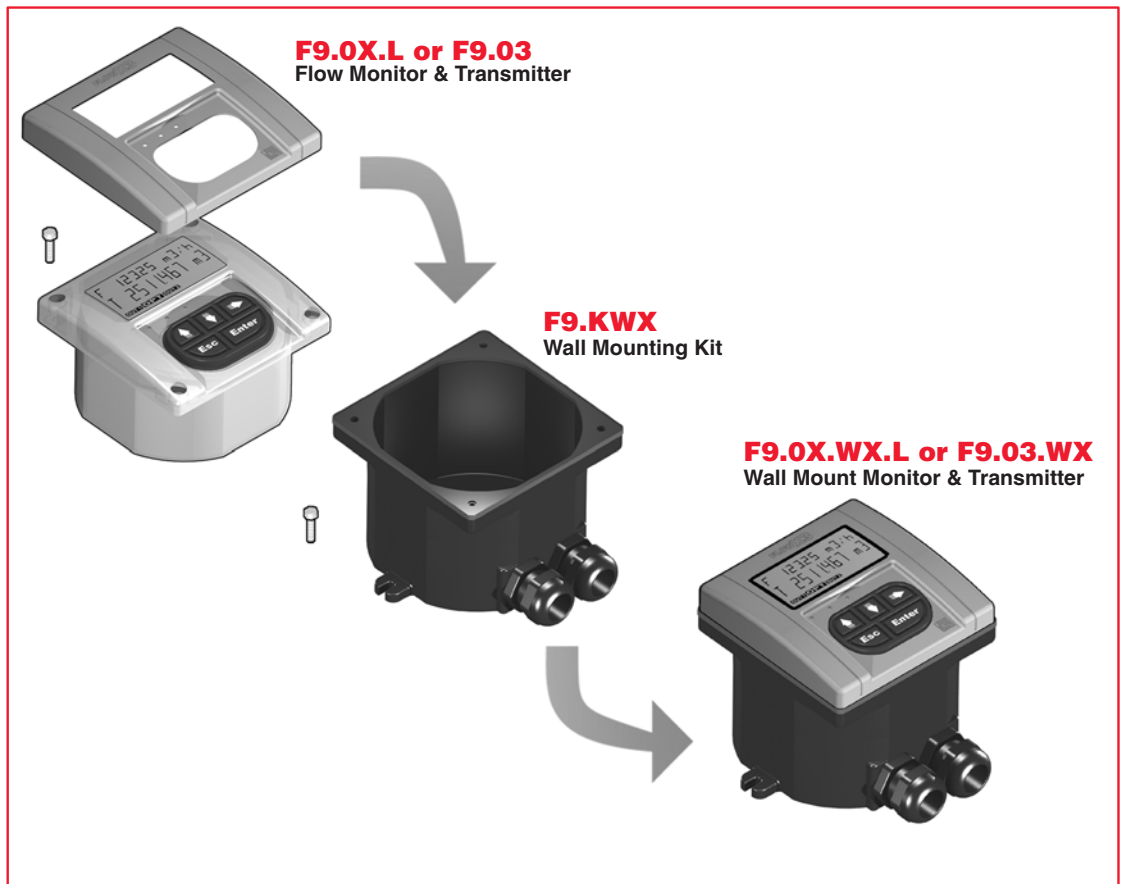
**FLS FLOWX3 Flow Sensor
(sold separately)**

F3.00.H.XX - F3.10.H.XX- F3.15.H.XX
 ULF01.H.X - ULF3.15.XX.X
 ULF03.H.X - F111.H
 F3.80 - New F3.60M & F3.63M

Installation Wall Mount



The wall mounting version consists of the monitor and the wall mounting kit. The F9.KW1 kit includes the plastic adapter, the gasket for IP65 watertight wall installation and the fixing screws. The F9.KW2 includes also a 110/230 VAC to 24 VDC power supply directly mounted into the plastic adapter to provide a low voltage regulated output to the flow monitor. The instrument and the kit can be ordered separately (code F9.0X.L or F9.03 for the monitor and code F9.KWX for the kit) or together using the code F9.0X.WX.L or F9.03.WX.



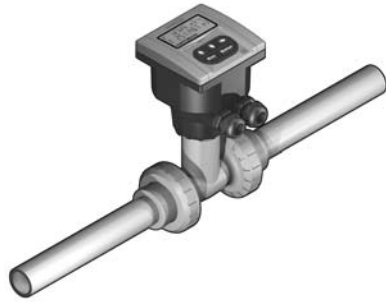
Input from



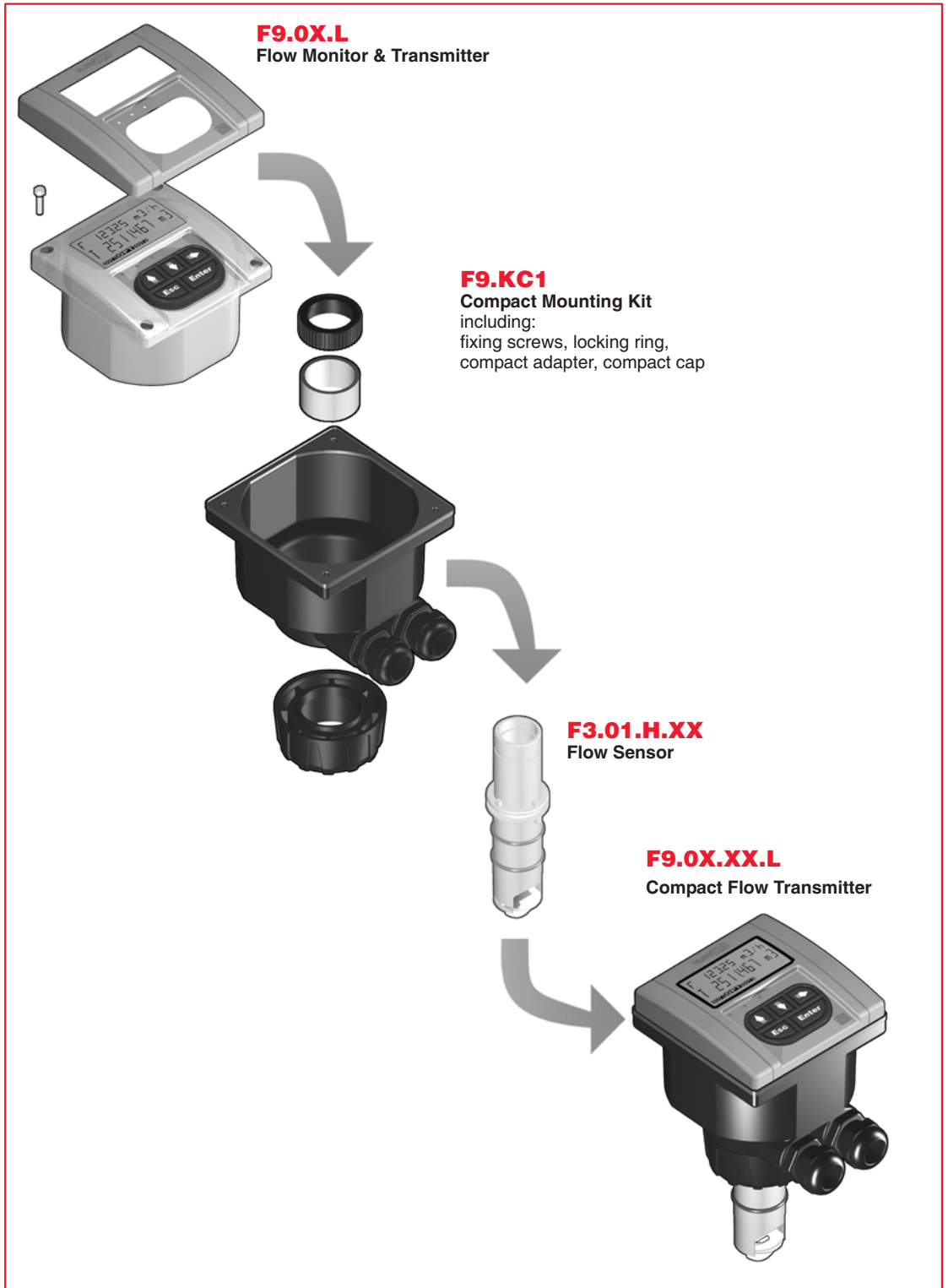
**FLS FLOWX3 Flow Sensor
(sold separately)**

F3.00.H.XX - F3.10.H.XX - F3.15.H.XX
 ULF01.H.X - ULF3.15.XX.X
 ULF03.H.X - F111.H
 F3.80 - New F3.60M & F3.63M

Installation Compact Mount

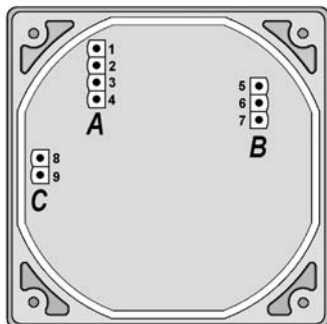


The compact mounting kit F9.KC1 includes the compact plastic adapter with gasket for IP65 watertight installation, the compact cap, the locking ring and four fixing screws for mounting the monitor directly onto the sensor. The instrument and the kit can be ordered separately (code F9.0X.L for the monitor and code F9.KC1 for the kit) or together using the code F9.0X.XX.L.



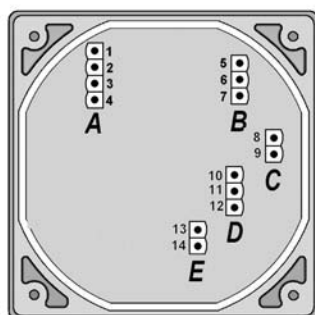
Rear Terminal View

Terminal F9.00.L



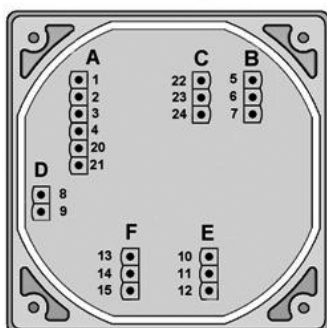
Power Supply	A	1	+ VDC
		2	+ LOOP
		3	- LOOP
		4	- VDC
SENSOR			
Sensor	B	5	GND
		6	IN
		7	V+
S.S.R. output	C	8	N.O.
		9	COM

Terminal F9.02.L



Power supply	A	1	+ VDC
		2	+ LOOP
		3	- LOOP
		4	- VDC
SENSOR			
Sensor	B	5	GND
		6	IN
		7	V+
S S R OutPut	C	8	NO
		9	COM
RELAY			
OUT RELAY	D	10	NC
		11	COM
		12	NO
S S R OutPut	E	13	NO
		14	COM

Terminal F9.03



Power Supply	A	1	+ VDC
		2	+ LOOP
		3	- LOOP
		4	- VDC
		20	+ LOOP2
		21	- LOOP2
SENSOR A			
Sensor A	B	5	GND
		6	IN
		7	V+
SENSOR B			
Sensor B	C	22	GND
		23	IN
		24	V+
Open collector output	D	8	O.C.+
		9	O.C.-
RELAY 1			
OUT 1 RELAY	E	10	NC
		11	COM
		12	NO
RELAY 2			
OUT 2 RELAY	F	13	NC
		14	COM
		15	NO

Technical Data

General

- Associated flow sensor:
 - FLS FLOWX3 Hall effect with frequency output.
 - FLS FLOWX3 New Electromagnetic flow sensor*.
- Materials:
 - Case: PC
 - Panel gasket: Neoprene
 - Wall and Field gasket: EPDM
 - Keypad: 5 button silicone rubber.
- Display:
 - backlight configuration (not available for F9.03)
 - 3 line LCD: 2 x 12 alphanumeric lines and 1 icon line
 - Update rate: 1 second
 - Contrast: User adjustable with 5 levels.
- Enclosure: IP65 front.

Electrical

- Supply Voltage: 12 to 24 VDC $\pm 10\%$, regulated.
- Sensor Input (Frequency):
 - Sensor power: 3.8 ÷ 5 VDC @ < 30 mA*
 - Range:
 - F9.00.L-F9.03 → 0.5 to 500 Hz
 - F9.02 → 0.5 to 1000 Hz
 - Optically isolated from current loop (only 4 wires version)
 - Short circuit protected.
 - Accuracy: $\pm 0,5\%$.
- Current output:
 - 4-20 mA, isolated, fully adjustable and reversible. (Not available for F9.00.L when backlight configuration is on).
 - Max loop impedance: 150 Ω @ 12 VDC, 330 Ω @ 18 VDC, 600 Ω @ 24 VDC.

- Open Collector output or Solid State Relay output:
 - User selectable as MIN alarm, MAX alarm, Pulse Out, Freq Out, Off, Window
 - Optically isolated, 50 mA MAX sink, 24 VDC maximum pull-up voltage
 - Max pulse/min: 300 (180 for F9.00.L)
 - Hysteresis: User selectable.
- Relay output:
 - User selectable as MIN alarm, MAX alarm, Window, Pulse Out, Off
 - Mechanical SPDT contact
 - Max voltage rating: 8A @ 24 VDC, 8A @ 240 VAC, resistive load
 - Max pulse/min: 60 for F9.00, 180 for F9.03
 - Hysteresis: User selectable.
 - Expected mechanical life (min. operations): 10^7
 - Expected electrical life (min. operations): 10^5 , for F9.03 N.O.: 5×10^4 / N.C.: 2×10^5 N.O./N.C. switching capacity 8A@240 VAC, for F9.03 N.O. 5A @ 250VAC / N.C. 2A @ 250VAC

Environmental

- Operating temperature: -10°C to $+70^{\circ}\text{C}$ (14°F to 158°F).
- Storage temperature: -15°C to $+80^{\circ}\text{C}$ (5°F to 176°F).
- Relative humidity: 0 to 95% non condensing.

Standards & Approvals

- Manufactured under ISO 9001 (Quality).
- Manufactured under ISO 14001 (Environmental Management).
- CE.

* For F3.60M & F3.63M power supply must be provided separately.

Ordering Data

F9.0X.L or F9.03

Part No.	Description	Wire Power Tech.	Power Supply	Input	Output
F9.00.L	Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)
F9.02.L	Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (open collector relays) 1 (relay)
F9.03	Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	2 (Freq.)	2 (4-20mA) 1 (open collector relays) 2 (relay)

F9.0X.P1.L or F9.03.P1 (Panel Mount version)

Part No.	Description	Wire Power Tech.	Power Supply	Input	Output
F9.00.P1.L	Panel Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)
F9.02.P1.L	Panel Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (relay)
F9.03.P1	Panel Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	2 (Freq.)	2 (4-20mA) 1 (open collector relays) 2 (relay)

F9.0X.WX.L or F9.03.WX (Wall Mount version)

Part No.	Description	Wire Power Tech.	Power Supply	Input	Output
F9.00.W1.L	Wall Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)
F9.02.W1.L	Wall Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (relay)
F9.03.W1	Wall Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	2 (Freq.)	2 (4-20mA) 1 (open collector) 2 (relay)
F9.00.W2.L	Wall Mount Flow Monitor & Transmitter	2 wire	110 to 230 VAC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)
F9.02.W2.L	Wall Mount Flow Monitor & Transmitter	3/4 wire	110 to 230 VAC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (relay)
F9.03.W2	Wall Mount Flow Monitor & Transmitter	3/4 wire	110 to 230 VAC	2 (Freq.)	2 (4-20mA) 1 (open collector) 2 (relay)

Ordering Data

FLOWX3 F9.00.XX.L (Compact Field Mount version)

Part No.	Description	Wire Power Tech.	Power Supply	Input	Output	Sensor Length	Sensor Body	Sensor O-rings
F9.00.01.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L0	CPVC	EPDM
F9.00.02.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L0	CPVC	FPM
F9.00.03.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L1	CPVC	EPDM
F9.00.04.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L1	CPVC	FPM
F9.00.05.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L0	PVDF	EPDM
F9.00.06.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L0	PVDF	FPM
F9.00.07.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L1	PVDF	EPDM
F9.00.08.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L1	PVDF	FPM
F9.00.09.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L0	316L SS	EPDM
F9.00.10.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L0	316L SS	FPM
F9.00.11.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L1	316L SS	EPDM
F9.00.12.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L0	316L SS	FPM
F9.00.13.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L0	BRASS	EPDM
F9.00.14.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L1	BRASS	FPM
F9.00.15.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L1	BRASS	EPDM
F9.00.16.L	Field Mount Flow Monitor & Transmitter	2 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 1 (solid state relays)	L1	BRASS	FPM

Ordering Data

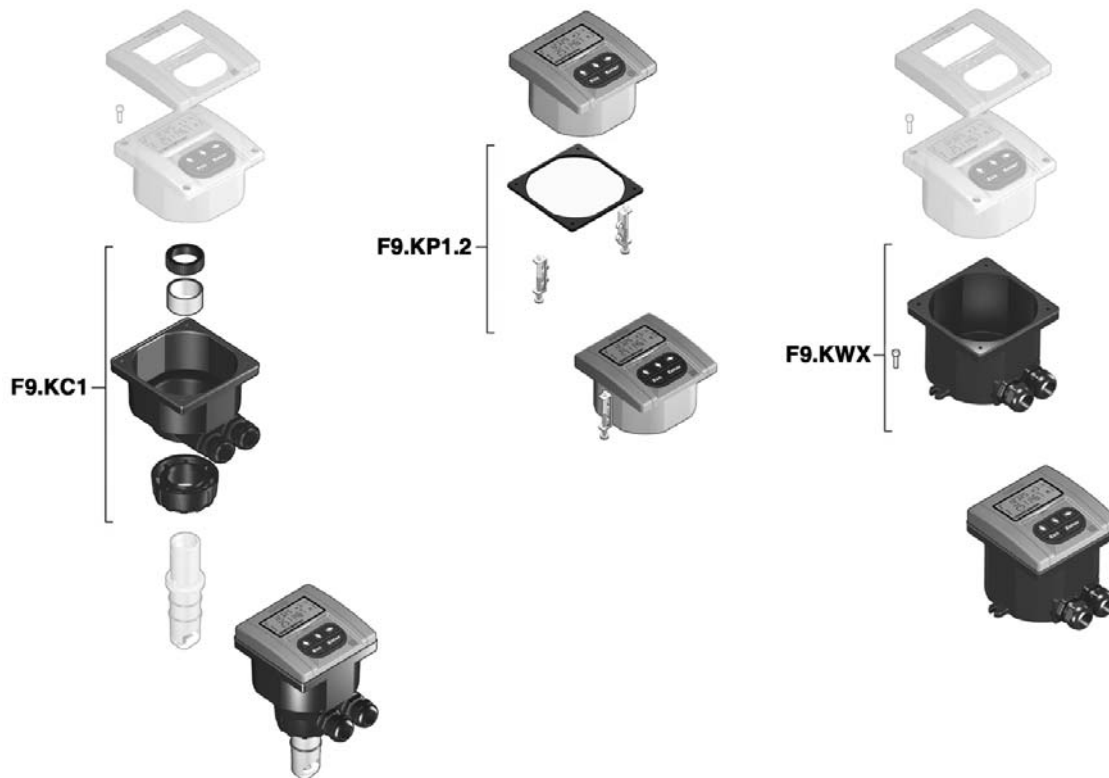
FLOWX3 F9.02.XX.L (Compact Field Mount version)

Part No.	Description	Wire Power Tech.	Power Supply	Input	Output	Sensor Length	Sensor Body	Sensor O-rings
F9.02.01.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L0	CPVC	EPDM
F9.02.02.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L0	CPVC	FPM
F9.02.03.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L1	CPVC	EPDM
F9.02.04.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L1	CPVC	FPM
F9.02.05.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L0	PVDF	EPDM
F9.02.06.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L0	PVDF	FPM
F9.02.07.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L1	PVDF	EPDM
F9.02.08.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L1	PVDF	FPM
F9.02.09.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L0	316L SS	EPDM
F9.02.10.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relè)	L0	316L SS	FPM
F9.02.11.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L1	316L SS	EPDM
F9.02.12.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L1	316L SS	FPM
F9.02.13.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L0	BRASS	EPDM
F9.02.14.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L0	BRASS	FPM
F9.02.15.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L1	BRASS	EPDM
F9.02.16.L	Field Mount Flow Monitor & Transmitter	3/4 wire	12 to 24 VDC	1 (Freq.)	1 (4-20mA) 2 (solid state relays) 1 (Relay)	L1	BRASS	FPM

Ordering Data

Mounting Kits

Part No.	Name	Description
F9.KC1	Compact mounting Kit	Plastic adapter with gasket, compact cap, locking ring and 4 fixing screws
F9.KP1.2	Panel mounting Kit	Mounting bracket with gasket
F9.KW1	Wall mounting Kit	Plastic adapter with gasket and fixing screws
F9.KW2	Wall mounting Kit with Power Supply	Plastic adapter with gasket, fixing screws and 110/230VAC to 24VDC power supply included



Spare Parts

Item	Part No.	Name	Description
1	F9.SP2	Cover	PC front cover, 3 LED
1	F9.SP3	Cover	PC front cover, no LED
2	F9.SP4.1	PG 13.5	PG13.5 Cable Gland for Compact or Wall mounting Kit
2	F9.SP4.2	PG 11	PG11 Cable Gland for Compact or Wall mounting Kit

